

REMARKS/ARGUMENTS

The Office Action dated January 27, 2006, has been noted and its contents carefully studied. In light of the foregoing amendments and attached supporting documentation, reconsideration of the rejection under 35 U.S.C. §§102 and 112, and the non-statutory double pending rejection, is courteously requested.

Initially, the Examiner's indication of allowable subject matter, as stated on page 6 of the Office Action, of claims 5, 9 and 14-18 is gratefully acknowledged. It is also noted that the indication of allowable subject matter has been qualified based on the assumption that applicant is able to overcome the rejection under 35 U.S.C. 112 concerning, in particular, claim 1.

With respect to claim 1 and the 35 U.S.C. § 112 rejection thereof, it is noted that the objected to reference to "session" has now been revised to reflect the discussion in the prior paragraph in which the entries are created and stored in the array which identify where data corresponding to the first session which is to be affected by a write operation by the second session, is located. As such, it is believed sufficient reasons have been given to enable the Examiner to withdraw the 35 U.S.C. § 112 rejection of claim 1, and of claims 2-10 as dependent thereon.

With respect to the indication of allowable subject matter, it is noted that claims 5 and 14 have been canceled and rewritten in the form of new independent claims 19 and 20 incorporating all of the limitations of claims 1, 5, 11 and 14. Claims 15-18 have been amended to depend from new allowable claim 20. New claims 21 and 22 have been added with claim 22 depending from claim 20, which is allowable. As such, claims 19, 20, 22, and 15-18 are clearly allowable for the reasons stated in the Office Action.

Turning now to the non-statutory double patenting rejection, attached is an executed terminal disclaimer, including the fee required. As a result, the obviousness type double patent rejection of claims 1, 4 and 11-12 over copending application Serial No. 10/126,711 has been addressed, and sufficient reasons have been given to enable the Examiner to withdraw the rejection.

Turning now to the 35 U.S.C. § 102 rejection of the claims in light of U.S. Patent Application Publication No. 2003/0005248 to Selkirk et al, a brief discussion of the invention as set forth in the rejected claims is presented to facilitate the Examiner's reconsideration.

In one aspect as set forth in claim 1, invention relates to a method of creating point-in-time view of data on a disk. The method includes the steps of initiating from a host a first session of writing data to a disk which affects a portion of the disk. Entries are created and stored in an array on the disk which identify where the data written to the disk in the first session is located. A second session of writing data to a disk is initiated at a time different from initiation of the first session. The second session of writing data affects a portion of the disk. Any portion of the disk corresponding to the first session which is to be affected by a write operation by the second session is copied, and entries are created and stored in the array which identify where data corresponding to the first session which is to be affected by the write operation by the second session is located. Entries in the array for at least one of the first and second sessions are invalidated when at least one of a new first session and a new second session is initiated.

As recited in claim 11 in an alternative aspect, the invention relates to a method of allowing point-in-time view of data on a disk for data written to a disk throughout a plurality of different sessions. The method as set forth in claim 11 includes the step of creating an array on a disk comprised of a map which stores entries which point to locations on a disk where data from different sessions is

located. Predetermined slots are assigned for corresponding sessions in the array and a unique session ID is assigned for each session for which entries are stored in the array.

It is respectfully urged that the invention as recited in the claims rejected in light of the cited reference is not anticipated under 35 U.S.C. § 102 and/or obvious under 35 U.S.C. § 103, as will become more clearly evident from the following detailed discussion of the reference, which is presented herein for the Examiner's kind consideration.

U.S. Patent Application Publication No. 2003/0005248 to Selkirk et al

U.S. Patent Application Publication No. 2003/0005248 to Selkirk et al (hereinafter "Selkirk") discloses a system in which a plurality of data storage elements is functionally coupled to one or more hosts. The plurality of data storage elements is organized using a plurality of layers of mapping tables. The layers provide unique identification of location of data such that mapping of individual data entries in a mapping table is variable and self-defining with respect to the amount of data managed. It is acknowledged that the system provides various instant copy mechanisms for copying data upon receiving a write operation, but fails to teach or suggest the specific method of applicant's claimed invention concerning first and second sessions, as well as the step of invalidating entries of the array as set forth in claim 1, or the specific features of claim 11 which include assigning a unique session ID for each session for which entries are stored in the array. With respect to the general teachings provided by Selkirk, please refer to the abstract thereof.

The teachings of Selkirk merely relate to a further improvement in a prior system which addressed the situation in prior subsystems in which performing a data file copy operation required that two exact copies of selected data files be made and resident in data storage memory. Such an operation consumed twice the amount of

memory for storage because two identical copies of the data file were required. As an incremental improvement, systems were developed in which data files were stored as received from a processor in back-end data storage by mapping a processor assigned data file identifier to a file logical address that identified the physical storage location of the data. The dynamically mapped virtual data storage subsystem performed a copy of the data file by creating a duplicate data file pointer to a data file identifier in a mapping table to reference the original data file. Such a mechanism enabled the processor to access the data file via two virtual track addresses while only a single physical copy of the data file was resident on the back-end data storage device in the data storage subsystem (see generally description of related art).

In accordance with the method and system of Selkirk, the system separates processing of data unit requirements from the selection of which storage subsystems to use for storage by using a storage methodologies inventory. Various instant copy mechanisms are provided for copying data upon receiving a write operation to either original or to copy data. In Selkirk, an improvement for some workloads and types of data is to use dynamically assigned pointer ranges to track snap copy data, thereby possibly using less storage than bitmaps (paragraph 76). There is described a mechanism by which instant copies of stored data in a variable dynamically changeable mapping scheme storage device may be made (paragraph 119).

While various copy schemes are described, there is nothing in Selkirk which anticipates under 35 U.S.C § 102, or even renders obvious under 35 U.S.C § 103, the specific methodology of applicant's invention which address problems inherent in keeping track of two separate and discrete sessions in which a second session affects data written for the first session, and in which the invention in accordance with its specific methodology provides for maintaining the data for the first session intact and accessible irrespective of writing on any data by a second session which may affect data written on a portion of the disk for the first session. Yet still further, there is nothing in Selkirk which teaches or suggests the specific step of invalidating entries

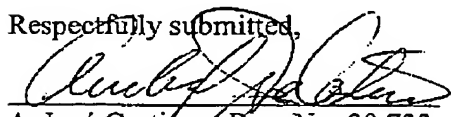
in the array for at least one of the first and the second session when at least one of a new first session and a new second session is initiated. These features are clearly set forth in claim 1 and not anticipated by or obvious from Selkirk.

As to claim 11, a different aspect of the invention is claimed which also involves the specific steps of assigning a unique session ID for each session for which entries are stored the array. Selkirk fails to address or even suggest addressing the problems described in applicant's specification and as inherent as part of the claims which deals with the problem of keeping track of multiple sessions in which overwriting may occur affecting data for first session, in a manner in which the data for the different sessions can be effectively and efficiently tracked, controlled and data invalidated as appropriate for an effective multiple session system control.

For the foregoing reasons, it is respectfully urged that all of the claims clearly define patentable subject matter under 35 U.S.C § 102 and/or 103. Nonetheless, should the Examiner still have any comments, questions or suggestions of a nature necessary to expedite prosecution of the application, or to place the case in condition for allowance, he is courteously requested to telephone the undersigned at the number listed below.

Dated: April 27, 2006,

Respectfully submitted,



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Enclosures